What is claimed is:

1. A network routing apparatus, comprising:

a plurality of routing units each connected to at least one line, wherein each of said plurality of routing units receives a packet from a line, extracts output destination information using a packet header included in the packet received, and routes the received packet in accordance with the output destination information; and

a switching unit connected to each of said plurality of routing units, wherein said switching unit receives from each of said routing units a packet and the output destination information, and in accordance with the output destination information, transfers the packet received, to any one of said plurality of routing units;

each of said routing units further comprising:

one or a plurality of transfer means each connected to at least one line, wherein said plurality of transfer means each extract and output a packet header of the packet received from each line;

one or a plurality of search means each connected to each of said plurality of transfer means, wherein said plurality of search means each receive the packet header from each of said plurality of transfer means, extract the output destination information by use of the packet header,

and output the output destination information; and

one or a plurality of switch input/output means each for receiving the received packet and the output destination information and transmitting the received packet to said switching unit or each of said plurality of transfer means in accordance with the output destination information;

wherein, in each said routing unit, one or said plurality of search means are each connected to one or said plurality of transfer means.

2. The network routing apparatus according to claim 1, comprising as said routing unit:

a first routing unit in which one of said search means is connected to one of said transfer means,

a second routing unit in which said plurality of transfer means are connected to one of said search means,

a third routing unit in which said plurality of search means are connected to one of said transfer means, or

a fourth routing unit in which said plurality of transfer means and said plurality of search means are connected to one another.

3. The network routing apparatus according to claim 1, comprising as said routing units:

a first routing unit in which said plurality of

search means are connected to one of said transfer means, or

a second routing unit in which said plurality of transfer means and said plurality of search means are connected to one another,

wherein, in said first or second routing unit, said plurality of transfer means each output the packet header to said plurality of connected search means.

4. The network routing apparatus according to claim 1, comprising as said routing unit:

a first routing unit in which said plurality of transfer means are connected to one of said search means, or

a second routing unit in which said plurality of transfer means and said plurality of search means are connected to one another,

wherein, in said first or second routing unit, said plurality of transfer means each output the output destination information to one of said transfer means to which the packet header was output.

5. The network routing apparatus according to claim 2, wherein:

said transfer means and said search means both comprise an "n" number of input/output terminals ("n": natural number equal to or greater than 2);

in said first routing unit, said transfer means and said search means are connected using said "n" number of input/output terminals;

in said second or fourth routing unit, when an "i" number of said search means are connected to said transfer means ("i": natural number equal to or greater than 2), said transfer means and said "i" number of search means are each connected using respectively an "n/i" number of input/output terminals; and

in said third or fourth routing unit, when a "j" number of said transfer means are connected to said search means ("j": natural number equal to or greater than 2), said search means and said "j" number of transfer means are each connected using an "n/j" number of input/output terminals.

6. The network routing apparatus according to claim 2, wherein:

in said first routing unit, said transfer means and said search means both transmit/receive the packet header or the output destination information, in increments of a maximum of "n" bits ("n": natural number equal to or greater than 2);

in said second or fourth routing unit, when an "i" number of said search means are connected to said transfer means ("i": natural number equal to or greater than 2),

said transfer means and said "i" number of search means
each transmit/receive the packet header or the output
destination information, in increments of a maximum of
"n/i" bits; and

in said third or fourth routing unit, when a "j"
number of said transfer means are connected to said search
means ("j": natural number equal to or greater than 2),
said search means and said "j" number of transfer means
each transmit/receive the packet header or the output
destination information, in increments of a maximum of
"n/j" bits.

7. The network routing apparatus according to claim
1, wherein said transfer means further comprises:

a retaining means that retains connection
information for identifying the number of said search means
connected to said transfer means; and

an output means that outputs the packet header to
each of said search means, in bit increments associated
with the connection information.

8. The network routing apparatus according to claim
1, wherein said search means further comprises:

a retaining means that retains connection
information for identifying the number of said transfer
means connected to said search means; and

an output means that outputs the output destination

information, in bit increments associated with the
connection information, to said transfer means.

9. The network routing apparatus according to claim
8,

wherein said search means further comprises a second
retaining means that retains identification information for
identifying said transfer means;

wherein said output means outputs the output
destination information to said transfer means identified
by the identification information.

10. A network routing apparatus, comprising:

a plurality of routing units each connected to at
least one line, wherein each of said plurality of routing
units routes the packet received from each line; and

a switching means connected to each of said
plurality of routing units, wherein said switching means
transfers, to any one of said plurality of routing units,
the packet received from each of said routing units;

each of said routing units further comprising:

one or a plurality of transfer means each connected
to at least one of the lines, wherein said plurality of
transfer means each extract and output a packet header of
the packet received from each line; and

one or a plurality of search means each connected to
each of said plurality of transfer means, wherein said

plurality of search means each receive the packet header from each of said plurality of transfer means, extract output destination information using the packet header, and output the output destination information;

wherein each of said routing units is either

a first routing unit in which one of said search means is connected to one of said transfer means,

a second routing unit in which said plurality of transfer means are connected to one of said search means,

a third routing unit in which said plurality of search means are connected to one of said transfer means, or

a fourth routing unit in which said plurality of transfer means and said plurality of search means are connected to one another.

11. A routing unit used in a routing apparatus which is connected to a plurality of lines to route the packet received from each line, said routing unit comprising:

one or a plurality of transfer means each connected to at least one line, wherein said plurality of transfer means each receive a packet from a line, extract a packet header of the packet received, and output the packet header; and

one or a plurality of search means each connected to each of said transfer means, wherein said plurality of

search means each receive the packet header, extract output destination information using the packet header, and output the output destination information;

wherein one or said plurality of search means are connected to each of said plurality of transfer means, and

one or said plurality of transfer means are connected to each of said plurality of search means.

12. The routing unit according to claim 11,

wherein said plurality of search means are connected only to one of said plurality of transfer means or said plurality of transfer means are connected to said plurality of search means; and

wherein said plurality of transfer means each output the packet header to said plurality of connected search means.

13. The routing unit according to claim 11,

wherein said plurality of transfer means are connected only to one of said plurality of search means or said plurality of search means are connected to said plurality of transfer means; and

wherein said plurality of search means each output the output destination information only to said transfer means that has output the packet header.

14. The routing unit according to claim 11, wherein:

said plurality of transfer means and said plurality

of search means each comprise an "n" number of input/output terminals ("n": natural number equal to or greater than 2);

when one of said transfer means and one of said search means are connected to each other, both means are connected using said "n" number of input/output terminals;

when an "i" number of said search means are connected to one of said transfer means ("i": natural number equal to or greater than 2), said transfer means and said "i" number of search means each is connected using an "n/i" number of input/output terminals; and

when a "j" number of said transfer means are connected to one of said search means ("j": natural number equal to or greater than 2), said search means and said "j" number of transfer means each being connected using respectively an "n/j" number of input/output terminals.

15. The routing unit according to claim 11, wherein:

when one of said transfer means and one of said search means are connected to each other, said transfer means and said search means both transmit/receive the packet header or the output destination information, in increments of a maximum of "n" bits ("n": natural number equal to or greater than 2);

when an "i" number of said search means are connected to one of said transfer means ("i": natural number equal to or greater than 2), said transfer means and

said "i" number of search means each transmit/receive the packet header or the output destination information, in increments of a maximum of "n/i" bits; and

when a "j" number of said transfer means are connected to one of said search means ("j": natural number equal to or greater than 2), said search means and said "j" number of transfer means each transmit/receive the packet header or the output destination information, in increments of a maximum of "n/j" bits.

16. The routing unit according to claim 11, wherein said transfer means further comprises:

a retaining means that retains connection information for identifying the number of said search means connected to said transfer means; and

an output means that outputs the packet header information, in bit increments associated with the connection information, to said search means.

17. The network routing apparatus according to claim 11, wherein said search means further comprises:

a retaining means that retains identification information for identifying the number of said transfer means connected to said search means; and

an output means that outputs the output destination information, in bit increments associated with the connection information, to said transfer means.

18. The routing unit according to claim 17, wherein said transfer means further comprises:

a second retaining means that retains identification information for identifying said transfer means,

wherein said output means outputs the output destination information to said transfer means to be identified by the identification information.